angle of heel that the vessel trims free and the trimming moment is zero.

TABLE 174.310—PERMEABILITY OF FLOODABLE SPACES

Spaces and tanks	Permeability
Storerooms	0.60
Accommodation spaces	0.95
Consumable liquid tanks	0.00 or 0.95—whichever results in the more disabling condition.
Machinery space	0.85—unless otherwise supported by calculations.
Cargo tanks	Determined from the actual density and amount of liquid carried in the tank.

§ 174.315 Extent and character of damage.

(a) The calculations required by § 174.310 must show that the dredge can survive damage at any location along the length of the vessel including at a transverse bulkhead in accordance with paragraph (b) of this section.

(b) The calculations required by paragraph (a) of this section must assume the most disabling side penetration with the damage collision penetration provided by Table 174.315, except that if the most disabling damage collision penetrations would be less than those provided by Table 174.315, the smaller damage collision penetration must be assumed.

TABLE 174.315—EXTENT OF DAMAGE COLLISION PENETRATION

Longitudinal extent	$0.495L^{2/3}$ or 47.6 feet. [$(1/3)(L)^{2/3}$ or 14.5 meters] whichever is less.
Transverse extent [1]	B/5 or 37.7 feet. (11.5 meters), whichever is less.
Vertical extent	From the base line upward without limit.

[1] Damage applied inboard from the vessel's side at a right angle to the centerline at the draft corresponding to the working freeboard assigned under subchapter E of this chapter.

§ 174.320 Damage survival.

A hopper dredge survives assumed damage if it meets the following conditions:

(a) The maximum angle of heel in each stage of flooding must not exceed 30 degrees or the angle of downflooding whichever is less.

(b) The final waterline, taking into account sinkage, heel, and trim, must be below the lowest edge of each opening through which progressive flooding may take place.

(c) The righting arm curve calculated after damage must:

(1) Have a minimum positive range of 20 degrees beyond the angle of equilibrium; and

(2) Reach a height of at least 4 inches (100mm) within the 20 degree positive range.

(d) Each opening within, or partially within, the 20 degree range beyond the angle of equilibrium must be weathertight.

(e) After flooding or equalization as allowed by § 174.325, the hopper dredge's metacentric height must be at least 2 inches (50mm) when the dredge is in an upright position.

§ 174.325 Equalization.

When doing the calculations required by § 174.310 of this subpart—

(a) Equalization arrangements requiring mechanical aids, such as valves, may not be assumed to be effective in reducing the angle of heel; and

(b) Spaces joined by ducts may be assumed to be common spaces only if equalization takes place within 15 minutes after flooding begins.

§ 174.330 Jettisoning of spoil.

(a) When doing the calculations required by § 174.310 for a hopper dredge with bottom doors, it may be assumed that the spoil is jettisoned immediately after damage and that the bottom doors remain open if:

(1) The bottom doors are designed so that they may be fully opened from:

(i) The closed position within two minutes even if the main power source is lost or the bottom door actuating mechanism is damaged; and

(ii) The navigating bridge;

(2) The discharge area through the bottom doors is equal to or greater than 30 percent of the maximum cross sectional area of the hopper measured in a plane parallel to the waterline; and

(3) Asymmetrical jettisoning of the spoil is impossible.

(b) When doing the calculations required by § 174.310 for a hopper dredge with a split hull, it may be assumed

that the spoil is jettisoned immediately after damage if—

(1) The hull is designed so that—

(i) The complete separation is effected within two minutes even if the main power source is lost or the actuating means is damaged; and

(ii) The actuating means can be operated from the navigating bridge;

(2) It is shown to the Commanding Officer, Marine Safety Center, either by calculations or by operational tests, that the hulls can separate sufficiently to allow the dredged material to dump without bridging; and

(3) Asymmetrical jettisoning of the spoil is impossible.

DESIGN

§174.335 Watertight doors.

(a) Each hopper dredge must have sliding watertight doors (Class 3) approved under §170.270 of this chapter if the sill for the door is—

(1) Installed below the bulkhead deck; and

(2) Less than 24 inches above the final waterline as shown by the calculations required by §174.310 in each damage condition up to and including the maximum amount of assumed damage.

(b) Each hopper dredge must have sliding watertight doors (Class 3) approved under §170.270 of this chapter, or quick acting hinged watertight doors (Class 1) approved under the same subpart if the sill of the watertight door is—

(1) Installed below the bulkhead deck; and

(2) Greater than 24 inches above the final waterline as shown by the calculations required by §174.310 in each damage condition up to and including the maximum amount of assumed damage.

[CGD 76–080, 54 FR 36977, Sept. 6, 1989, as amended by CGD 95–072, 60 FR 50468, Sept. 29, 1995]

§174.340 Collision bulkhead.

Each hopper dredge must have a collision bulkhead that is located not less than 5 percent of the length abaft of the forward perpendicular.

Subpart J—Special Rules Pertaining to Dry Cargo Ships

SOURCE: CGD 87–094, 58 FR 17320, Apr. 1, 1993, unless otherwise noted.

§174.350 Specific applicability.

This subpart applies to each new ship of 500 gross tons or over, as calculated by the International Convention on Tonnage Measurement of Ships, 1969, designed primarily for the carriage of dry cargoes, including roll-on/roll-off ships and integrated tug and barges (ITBs) when operating as a combined unit.

§174.355 Definitions.

New ship means a ship:

(1) For which the building contract is placed on or after February 1, 1992; or

(2) In the absence of a building contract, the keel of which is laid or which is at a similar stage of construction on or after August 1, 1992; or

(3) The delivery of which is on or after February 1, 1997; or

(4) For which application for reflagging is made on or after February 1, 1997; or

(5) Which has undergone a major conversion:

(i) For which the contract is placed on or after February 1, 1992; or

(ii) In the absence of a contract, the construction work of which is begun on or after August 1, 1992; or

(iii) Which is completed on or after February 1, 1997.

§174.360 Calculations.

Each ship to which this subpart applies, must meet the minimum standard of subdivision and damage stability required for that ship by the International Convention for the Safety of Life at Sea, 1974, as amended, chapter II–1, part B–1. Compliance with the applicable requirements must be demonstrated by calculations and reflected in information on loading restrictions, such as a maximum height of the center of gravity (KG) or minimum metacentric height (GM) curve that is part of the stability information required by §170.110 of this chapter and Regulation 25–8 of The International Convention for the Safety of Life at